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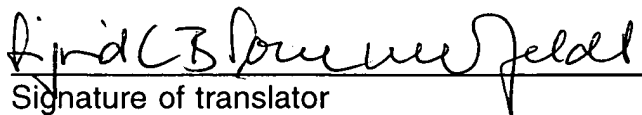
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## **Electric Hairdressing Device**

The invention relates to an electric hairdressing device comprising several hair curlers each including a heat store, a container for storing and heating the hair curlers and a heating device assigned to the storage container and comprising at least one heating element for heating the hair curlers. The invention further relates to a hair curler, in particular for use with such a hairdressing device.

Electric hairdressing devices comprise a storage container in which hair curlers can be stored. The hair curlers themselves have available one heat store each, which is formed by a metal body, for example of aluminum. Encompassing the heat store the hair curlers have available a synthetic shell with a rough surfaces, which is formed, for example by flocking or by projecting synthetic hooklets extending from a synthetic grid. Such a hairdressing device has further at its disposal a heating device comprising at least one heating element. According to prior art the heat store for heating the hair curlers is freely accessible via a front side. The hair curler is brought into contact with this side on a complementarily developed element of the heating device. The hair curlers are held in the storage container one lying next to the other and with both front sides in a hair curler receptacle under prestress, for one to prevent the hair curlers from rolling out, however primarily in order for the hair curlers to be in contact under a certain contact pressure with their thermal contact face on the heating device or the heating element giving off heat. To employ such a hairdressing device the hair curlers are first heated, subsequently individually removed manually from the storage container, rolled into the hair or strand of hair to be dressed and subsequently secured with a clasp. To remove the hair curlers from the storage container, the curler is most often grasped with one hand at its two front sides. In this process care must be taken that the exposed hot surface of the heating device or of the heating element is not touched.

In order to achieve a specified hairdressing result, the hair curlers must be left in the hair for a considerable length of time, and specifically until the heat contained in the heat store of each hair curler has been transferred to the hair to be shaped. However, this time period is occasionally considered to be too long.

Building on this discussed prior art, the invention therefore addresses the problem of further developing an above cited hairdressing device according to the species, such that not only the handling of the hair curlers is improved to the extent that the danger of unintentional touching of a heating element is avoided, but with which the desired hair shaping process can be completed more rapidly.

According to the invention this problem is solved thereby that each of the hair curlers comprises a heat store with a heating element receptacle, with which a hair curler can be detachably placed onto a heating element of the storage container and wherein through the storage container or through the heating element(s) the hair curlers are held with their one front side freely accessible, and that with the hairdressing device is associated an application handle for grasping and rolling one hair curler each held in the storage container in a torsion-tight configuration, which has available a hair curler finger, pivotably articulated in the manner of tongs, for holding a strand of hair between the hair curler finger and the surface of a hair curler.

Independently of whether or not the surface serving for placing against the hair is smooth or formed for example by flocking, the heat store of each hair curler comprises a receptacle for receiving a heating element such that each hair curler can be placed onto a heating element. A hair curler can, consequently, be held upright in the container such that a front side of the hair curler is freely accessible at the top. The heating elements of the heating device of the storage container can be peg-like attachments of a larger heating element with which several hair curlers or their heat stores can be heated. However, preferred is an embodiment in which with each hair curler a separate heating element is associated for heating a heat store. The heating

element receptacle of each hair curler is usefully conceptualized as a sleeve-form receptacle such that the heating element is circumferentially encompassed by the heat store of a hair curler and usefully is in contact on the inside of the receptacle. Thereby, for one, the provided heating energy is reduced to the required minimum; further, by providing individual heating elements for each hair curler, the size of the individual heating elements can be adapted to the size of the heated hair curler. Consequently, larger hair curlers with a larger heat store can be placed onto a heating element which, with respect to its capacity is larger than smaller hair curlers. The hairdressing device in such an embodiment can be conceptualized such that essentially all hair curlers, also such of different size, are at their specified hairdressing temperature simultaneously.

Through the described storage configuration of the hair curlers by placement onto a heating element, with one front side of the hair curlers being freely accessible, the heating element(s) can be disposed in the interior of the storage container, such that only the free front side of a hair curler is accessible at the top. Thereby the danger is avoided that when handling the hair curlers the heating element as such is unintentionally touched.

Lastly, this hairdressing device comprises further an application handle for grasping or removing one hair curler in each instance from the storage container and for wrapping the strand of hair. Employing such an application handle, for one, has the advantage that the hot hair curlers basically do not need to be touched by hand and, for another, that wrapping the hair curlers, which are smooth on the outside, is readily possible thereby that the application handle comprises a hair curler finger for holding a hair strand between the hair curler finger and the surface of a hair curler. Thus, after a hair curler has been removed from the storage container with the application handle it can readily be wrapped into the hair, in that a hair strand is inserted between the hair curler finger, articulated in the manner of tongs on the application handle. Using an application handle can also be employed for the

purpose of carrying out the wrapping process of the hair curlers with a motor drive, such that the grip of the application handle overall does not need to be actively rotated in order to wrap a hair curler into the hair. The use of such application handle has, moreover, the advantage that the hair curlers as such can fundamentally be heated to a higher temperature than would be the case within prior known hair curlers, which are manually rolled into the hair. If the hair curlers are heated to a higher temperature, the shaping process of the hair is not only completed more rapidly, but, in addition, has a longer lasting effect.

In a further development a hairdressing device is considered to be especially advantageous, in which the hair curlers, at least in the sections intended for being placed into contact on the hair to be shaped, have a smooth surface. This allows additionally for a heat transfer from the hair curler onto the hair to be improved with the consequence that the hair shaping process can be completed more rapidly. Such a hair curler can fundamentally be formed by the heat store itself, for example by a cylindrical aluminum rod.

The heating element receptacle of the heat store of the hair curler is usefully disposed such that it follows the longitudinal extent of the hair curler and penetrates the heat store if possible by more than 50% of its longitudinal extent. To connect a hair curler with the application handle according to one embodiment of the invention each hair curler comprises a receptacle also following the longitudinal extent of the hair curler, which is disposed eccentrically with respect to the heating element receptacle. The contour of such a receptacle is usefully conceptualized such that a complementary element, associated with the application handle, for example a blade or a blade-like extension, inserted therein, is held therein torsion-tight. Consequently, such a hair curler can be grasped with the application handle thereby that a blade associated with the application handle is inserted into such a receptacle and that the hair curler finger under spring tension is in contact on the outside of the hair curler, such that the hair curler is held through the application handle in the manner of tongs. In such

an embodiment removing the hair curler from the blade after wrapping the hair curler into the hair is readily possible with the hair curler finger open. The at least one receptacle of each hair curler terminates toward that front side of the hair curler, which is freely accessible at the top when such a hair curler is plugged onto a heating element in the storage container.

The heating element(s) of the heating device of the storage container is(are) usefully disposed in a common chamber. Since for heating the hair curlers when they are plugged onto the heating elements, at least regionally also extend into this chamber, it can be utilized to treat, for example to wet, the hair curlers before they are applied. In such a case the storage container comprises additionally a vapor generator, with which the vapor of a liquid, for example water vapor, can be generated if desired. Such a vapor generator comprises a water container which, for example, is closed at the output side with a wick. The water container with the wick is supported displaceably in the container, with a heating plate disposed opposing the wick. If there is the wish to wet the hair curler for example with water vapor, this water tank with its wick is moved toward the heating element such that, when the wick abuts the heating element, a dose of water vaporizes. It is also possible to utilize such a common chamber in order to displace therein an ionization device in order to be able to coat the outside of the hair curlers with ions. For this purpose, the hair curlers provided in such an embodiment are provided on the outside with an electrically non-conducting surface coating. This can be, for example, a ceramic coating.

In addition, the container usefully comprises a pocket for storing the application handle. The advantage is, for one, that in the preheating process of the hair curlers the application handle and, in particular, its elements provided for grasping the hair curlers, for example the blade and the hair curler finger are at least heated proportionately so that an undesirable cooling of the same is reduced to a minimum when grasping the hair curlers with the application handle. If the hair curler finger also projects into the above described chamber of the storage container, and if it

comprises an ionization device, the hair curler finger, if coated to be electrically non-conducting, can also be coated with ions like the hair curler.

In the following the invention will be described in conjunction with an embodiment example with reference to the attached Figures. Therein depict:

- Fig. 1**        a perspective view of an electric hairdressing device with a storage container and an application handle,
- Fig. 2**        a longitudinal section through the hairdressing device of Figure 1,
- Fig. 3**        a perspective view of the opened hairdressing device of Figure 1 showing in schematic form the removal of a hair curler with the application handle,
- Fig. 4**        the application handle equipped with a hair curler and a hair curler, and
- Fig. 5**        the application handle in the process of grasping a hair curler.

A hairdressing device 1 comprises a storage container 2, which is closed at the top with a pivotably articulated lid 3. The storage container 2 serves for storing a multiplicity of hair curlers. Part of the hairdressing device 1 is further an application handle 4, which, when not in use, can be slid into a pocket 5 of the storage container 2. Figure 1 depicts the application handle 4 partially slid into the pocket 5. Above the pocket is a grip depression 6 for picking up the hairdressing device 1.

The storage container 2 of the hairdressing device 1 comprises an interior chamber 7 which at the top is delimited by an aperture B and otherwise by the walls of the storage container 2. In the interior chamber 7 of the storage container 2 a number of

heating elements is provided corresponding to the number of hair curlers L disposed in the storage container 2. In Figure 2 two heating elements 8, 8' are shown, on each of which a hair curler L is placed. In the depicted embodiment example the heating elements 8, 8' are elements which are rectangular in cross section and formed substantially of two plates, between which the electric heater proper, for example a resistance heating element, is disposed. The individual heating elements 8, 8' are secured in common on a plate not shown in the Figures and form blade-like pegs through their projecting disposition.

The hair curlers L of the hairdressing device 1 are aluminum workpieces whose front sides are coated with a synthetic material. The shell surface of the hair curlers L, provided for being placed in contact on the hair to be shaped, is provided with an electrically non-conducting ceramic coating. Following axially the longitudinal extent of a hair curler L from the lower front side 9 of a hair curler L a heating element receptacle 10 is introduced into the body and, consequently, into the heat store of the hair curler L. This and the following description refers to the hair curler L shown on the left in Figure 2 with respect to the reference symbols. All other hair curlers L of the hairdressing device 1 are structured analogously. The contour of the heating element receptacle 10 corresponds to the outer contour of the heating element 8, such that circumferential close contact is given between the inside of the heating element receptacle 10 of the hair curler L and the outside of the heating element 8 is given. Consequently, the heating element 8 is annularly encompassed by the heating element receptacle 10. This concept shows clearly that the entire heat provided by the heating element 8 is transferred to the hair curler L. The hair curler L further includes two additional receptacles 11, 11' also following the longitudinal extent of the hair curler L. These receptacles 11, 11' are disposed eccentrically with respect to the heating element receptacle 10 and terminate in the front side 12 opposing the front side 9 of hair curler L. The contour of the two receptacles 11, 11, identically conceptualized with respect to their dimensioning, is oval. The receptacles 11, 11' serve for the purpose of torsion-tight grasping of the hair curlers L with the



application handle 4 and to remove it from the storage container 2.

The storage container 2 further includes a vapor generating device 13 with a water tank 14 and a wick 16 disposed in the vicinity of a heating plate 15. The water tank 14 and the wick 16 are supported displaceably relative to the heating plate 15, such that the wick 16 saturated with water can be brought into contact on the heating plate 15 for generating a dose of vapor. The vapor generated in this way is distributed within chamber 7 and wets the sections of the hair curlers L projecting into chamber 7. In chamber 7 further an ionization device 17 is accommodated, in order to generate ions which are deposited on the non-conducting outer surface of the hair curlers L.

In the depiction of Figure 2 the application handle 4 is completely slid into the pocket 5 of the storage container 2.

The hair curlers L of the hairdressing device 1 are formed of different sizes corresponding to the desired requirements. Corresponding to the different size of the hair curlers L, in the embodiment example shown in the Figures the heating elements with respect to their capacity or their size is adapted to the size of the particular hair curler L to be heated. The purpose of this is that not only all hair curlers L disposed in the storage container 2 have their specified temperature simultaneously or quasi-simultaneously after a heating phase, but also that the overheating of individual heating elements and, accordingly, excessive heating of individual hair curlers is avoided.

When using the hairdressing device 1 it is first switched on in order for the heating elements 8, 8' of the heating device to heat the hair curlers L inserted in the storage container 2. When the heating process is completed, the application handle 4 can be pulled out of pocket 5 and, after opening lid 3, the hair curlers L can be removed singly from the storage container 2. For this purpose the application handle 4

comprises a blade-like extension 18 (*cf.* Fig. 5) having an oval contour, which is inserted into a receptacle 11 or 11' of a hair curler L. The application handle 4 further comprises a hair curler finger 19, which is pivotably disposed on the grip 20 of the application handle 4. The hair curler finger can be pivotably moved by means of an actuation lever 21. When actuating the actuation lever 21 the movement of the hair curler finger 19 takes place against the force of a reset spring. Between aperture B of the storage container 2 and the outside of a hair curler L a sufficient gap exists in order for the hair curler finger 19 - as shown in Figure 3 - to be inserted into chamber 7. A hair curler L is subsequently held tongs-like by the application handle 4 and is pulled with the application handle 4 from chamber 7 (*cf.* Figure 3). When wrapping the removed hair curler L the hair curler finger 19 is opened, as is shown in Figure 4, such that subsequently a strand of hair to be shaped can be placed between the hair curler finger 19 and the shell surface of the hair curler L. By rotating the handle 4 the wrapping proper takes place of the hair curler L into the hair. The application handle 4 is detached from the wrapped hair curler L and secured with a clasp by opening the hair curler finger 19 slightly and pulling the extension 18 out of the receptacle 11 or 11'.

To reduce the energy necessary for heating a microswitch can be provided associated with each heating element 8, 8', which is closed when a hair curler is completely placed onto the heating element. Such a switch consequently opens during the removal of a hair curler such that this heating element is subsequently switched currentless. In Figure 4 again a hair curler L is shown individually. The ceramic coating of the hair curler L with its smooth shell surface is denoted in this Figure by the reference symbol 22. Through this coating 22 not only an electrically non-conducting surface is provided but, in particular, a smooth surface. Such a smooth surface not only has a favorable effect on the hair shaping process, rather, the hair curlers L can be removed again from the hair without complications and in particular without having to deal with entangling hairs. The concept of such a hair curler, in which it nearly completely consists of the heat store proper, not only has the

advantages with respect to application but also with respect to the capability of being able to develop it of lighter weight, since, due to the smooth surface, the heat transfer to the hair to be shaped is improved. The hair curlers are usefully heated to a temperature between 90 and 110°C, in particular to a temperature between 95 and 105°C. Due to the provision of the application handle 4, these relatively hot hair curlers can be applied without the hazard of injury.

## List of Reference Symbols

1	Hairdressing device
2	Storage container
3	Lid
4	Application handle
5	Pocket
6	Grip depression
7	Chamber
8, 8'	Heating element
9	Front side
10	Heating element receptacle
11, 11'	Receptacle
12	Front side
13	Vapor generating device
14	Water tank
15	Heating plate
16	Wick
17	Ionization device
18	Extension
19	Hair curler finger
20	Grip
21	Actuating lever
22	Ceramic coating
B	Aperture
L	Hair curler

## Patent Claims

1. Electric hairdressing device comprising several hair curlers (L) including a heat store, a container (2) for storing and heating the hair curlers (L) and a heating device associated with the storage container (2) and comprising at least one heating element (8, 8') for heating the hair curlers, **characterized in that** each of the hair curlers (L) comprises a heat store with a heating element receptacle (10), by which a hair curler (L) can be detachably placed onto a heating element (8, 8') of the storage container (2), wherein through the storage container (2) or through the heating element(s) (8, 8') the hair curlers (L) are held such that their one front side (12) is freely accessible, and that with the hairdressing device (1) an application handle (4) is associated for grasping and wrapping of one hair curler (L) each held in the storage container (2) in a torsion-tight configuration, which comprises a hair curler finger (19) pivotably articulated in the manner of tongs for holding a strand of hair between the hair curler finger (19) and the surface of a hair curler (L).
2. Hairdressing device as claimed in claim 1, **characterized in that** the hair curlers (L) have a smooth surface at least in those sections provided for coming into contact on the hair to be shaped.
3. Hairdressing device as claimed in claim 1 or 2, **characterized in that** the heating element receptacle (10) of the heat store of the hair curlers (L) is disposed following the longitudinal extent of the hair curler (L) and is closed annularly and that with each hair curler (L) is associated a separate heating element (8, 8') or a separate heating element extension.

4. Hairdressing device as claimed in one of claims 1 to 3, **characterized in that** each hair curler (L) comprises at least one receptacle (11, 11') following the longitudinal extent of the hair curler (L) and the application handle (4) a blade-like extension (18) for insertion into the receptacle (8, 8') of the hair curlers (L), wherein, due to the contour of such a receptacle (11, 11') and that of the extension (18), a hair curler (L) is held torsion-tight on the extension (18) of the application handle (4).
5. Hairdressing device as claimed in claim 4, **characterized in that** the at least one receptacle (11, 11') terminates exclusively toward the front side (12), opposing the heating element receptacle (10), of the hair curlers (L).
6. Hairdressing device as claimed in one of claims 1 to 5, **characterized in that** the heating element or the heating elements (8, 8') are disposed in a common chamber (7) in the storage container (2) as well as the hair curlers (L) placed on the heating elements (8, 8') such that they project into the chamber (7), and that the storage container (2) comprises a vapor generator (13) for the optional generation of vapor of a liquid within the chamber (7).
7. Hairdressing device as claimed in one of claims 1 to 6, **characterized in that** the hair curlers (L) comprise an electrically non-conducting surface coating (22) at least in the proximity of those sections coming, as specified, into contact with the hair.
8. Hairdressing device as claimed in claim 7, **characterized in that** several heating elements (8, 8') are disposed in a common chamber (7) in the storage container (2) and the hair curlers (L) placed onto the heating element(s) (8, 8') such that they project into the chamber (7), and that the storage container (2) comprises an ionization device (17) active in the chamber (7).

9. Hairdressing device as claimed in one of claims 1 to 8, **characterized in that** the storage container (2) comprises a pocket (5) for the insertion of the application handle (4).
10. Hairdressing device as claimed in claim 9, **characterized in that** the hair curler finger has an electrically non-conducting surface coating and the pocket is formed for receiving the application handle in order for the hair curler finger to extend into the chamber.
11. Hairdressing device as claimed in one of claims 1 to 10, **characterized in that** the heat store of the hair curlers (L) have a temperature between 90°C and 110°C, in particular between 95°C and 105°C after they have been heated.
12. Hair curler, in particular for a hairdressing device as claimed in one of claims 1 to 11, **characterized in that** it consists essentially completely of a heat store body and that it has a smooth surface at least in that section in which the hair to be shaped comes into contact with it.
13. Hair curler as claimed in claim 12, **characterized in that** the shell surface of the hair curler provided for coming into contact on the hair to be shaped is coated such that it is electrically non-conducting.
14. Hair curler as claimed in claim 13, **characterized in that** the coating is a ceramic coating (22).

## **Abstract**

An electric hairdressing device 1 comprises several hair curlers L each comprising a heat store, a container 2 for storing and heating the hair curlers L and a heating device associated with the storing container 2 and comprising at least one heating element 8, 8' for heating the hair curlers L. A special characteristic of this hairdressing device 1 is that each of the hair curlers L comprises a heat store with a heating element receptacle 10, with which a hair curler L can be detachably placed onto a heating element 8, 8' of the storage container 2, wherein through the storage container 2 or through the heating element(s) 8, 8' the hair curlers L are held with their one front side 12 freely accessible, and that with the hairdressing device 1 is associated an application handle 4 for grasping and wrapping in each instance one hair curler L held in the storage container 2 in a torsion-tight configuration, which comprises a hair curler finger 19 pivotably articulated in the manner of tongs for holding a strand of hair between the hair curler finger 19 and the surface of a hair curler L.

A hair curler L, in particular for use with a previously described hairdressing device 1 is characterized thereby that it consists essentially completely of a heat store body and that it has a smooth surface at least in that section on which the hair to be shaped comes into contact with it.